



Ageing, Justice, and Resource Allocation

Walker, T. (2016). Ageing, Justice, and Resource Allocation. *Journal of Medical Ethics*, 42(6), 348-352. DOI: 10.1136/medethics-2016-103563

Published in:
Journal of Medical Ethics

Document Version:
Peer reviewed version

Queen's University Belfast - Research Portal:
[Link to publication record in Queen's University Belfast Research Portal](#)

Publisher rights
Copyright 2016 the author.

General rights
Copyright for the publications made accessible via the Queen's University Belfast Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
The Research Portal is Queen's institutional repository that provides access to Queen's research output. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact openaccess@qub.ac.uk.

Ageing, justice, and resource allocation

Abstract

Around the world the population is ageing in ways that pose new challenges for health care providers. To date these have mostly been formulated in terms of challenges created by increasing costs, and the focus has been squarely on life prolonging treatments. However, this focus ignores the ways in which many older people require life enhancing treatments to counteract the effects of physical and mental decline. This paper argues that in doing so it misses important aspects of what justice requires when it comes to older people.

Introduction

In countries across the world an ever larger proportion of the population is living into old age (however we fix the limits of that).[1] The trajectory of an individual's life in old age varies considerably from person to person.[1, 2] Some people die suddenly after living into old age with very few health problems. Others experience what in the past would have been life shortening illnesses but which can now be treated, even if they nevertheless recur. This can lead to a pattern of treatment and recovery where the recovery nevertheless leaves the patient with a lower level of health than earlier. Another pattern, one that becomes more prevalent as the population ages, is of gradual decline in physical functioning. The individual experiences one or several conditions that whilst not necessarily life threatening require medical treatment or assistance if they are not to adversely affect the quality of life. For these people, as Atul Gawande puts it the end comes as a result of "the accumulating crumbling of one's bodily

systems while medicine carries out its maintenance measures and patch jobs. We reduce the blood pressure here, beat back the osteoarthritis there, control this disease, track that one, replace a failed joint, valve, piston, watch the central processing unit gradually give out. The curve of life becomes a long, slow fade".[3] One consequence of these patterns of ageing is that as people age, and in particular as they live into old age, they become more likely to develop a range of conditions that cannot be cured but can be managed in a way that helps restore (or at least helps to slow the decline in) functioning – which in turn affects their ability to live their lives in the way they chose. These underlying conditions also mean that some things that can happen at any age (for example, catching influenza, or falling) pose a greater risk of serious harm or death to older people than to those who are younger.

In this paper I will argue that these consequences of the different ways in which people age should be taken into account when assessing how to allocate healthcare resources. That is, I will argue that both how people age and the ways in which the chances of becoming ill or suffering severe harm vary with age are relevant for resource allocations decisions if older people are to be treated fairly. Because much of the existing debate on age and resource allocation does not adequately take account of these features, that debate is missing something important. In developing this argument I will be making three assumptions about the context in which these resource allocation decisions are being made. First, the decisions are being made within a healthcare system that provides treatments to people of all ages. Systems of this type are frequently Government funded but they need not be. Second, the resources available to those operating

the system are, and will remain, limited. Because of this not every treatment that would benefit patients can be provided. Third, fairness is a key consideration in determining what treatments to fund. In saying this, however, I do not mean to imply that it is necessarily the only consideration. As such, actual resource allocation decisions in practice may need to take into account much more than is considered in this paper.

Resource allocation and an ageing population

Ageing (and in particular living into very old age) increases the chances of developing a range of conditions (such as deteriorating hearing, osteoporosis, and type 2 diabetes) that cannot be cured but can be managed. To some extent these changes are inevitable. As the World Health Organization put it, “As people age, they experience a gradual accumulation of molecular and cellular damage that results in general decrease in physiological reserves. These broad physiological and homeostatic changes are largely inevitable, although their extent will vary significantly among individuals at any particular chronological age. On top of these underlying changes, exposures to a range of positive and negative environmental influences across the life course can influence the development of other health characteristics, such as physiological risk factors (for example, high blood pressure), diseases, injuries and broader geriatric syndromes.” [4] These conditions are not always life threatening if untreated, but can have significant negative impacts on a person’s quality of life unless interventions take place. These interventions may not tackle or reverse the underlying problem – just as glasses do not reverse the physiological changes that lead to deteriorating eyesight – but nevertheless help to maintain

functioning.[1,5] It is worth noting that these negative impacts are not necessarily caused simply by problems with the body. If I fall a few times I may be reluctant to go out on my own in case I fall (my confidence having been undermined). If I have bladder problems I may also be less willing to go out if public conveniences are not readily available. In these cases the physical problems I have developed are not the sole cause of the limitations in my life; those limitations are also affected by the social context. As society ages more and more people will develop these kinds of restrictions, but to date the implications of this for resource allocation decisions have not been extensively explored in the medical ethics literature – something that perhaps not surprising given the focus in medical ethics on acute care.[5]

This is not to say that there has been no debate about the impacts of ageing on resource allocation. Such debates typically draw on figures showing that on average more is spent per person on older people (over 65) than on younger adults, and that even more per head is spent on what have come to be referred to as the old old (those over 75 or 80).[6,7] As the population ages it is then argued that there will be increasing pressure on health services. One response to this has been to investigate whether age should be used as a factor in prioritizing health care. A variety of arguments – the fair-innings argument [8,9], Daniels’ prudential lifespan argument [10,11,12], and Callahan’s communitarian argument [13,14] – have been put forward to argue that (at least in some cases) the old should have a lower priority for health care. In contrast John Harris has over a number of years stressed that for each person who wants to go on living the ‘rest of our lives’ is something that we value equally – irrespective of how old

we are or how long we may have left to live.[9, 15, 16] This leads to what he refers to as an 'anti-ageist' argument opposing deprioritizing treatments on the basis of age or expected life expectancy; an argument that denies absolutely the relevance of age as a criterion for whether someone should receive life prolonging treatment. An important feature of all these arguments is that they have only been concerned with treatments that extend life.

Given their focus on the value of additional years or a normal lifespan, these arguments are not for the most part well suited to addressing resource allocation problems when it comes to the types of life enhancing treatments that are needed in response to physical or mental decline. Even if we agree, following Harris, that age should not be a criterion for the allocation of life prolonging treatments [9,15,16], and following Simona Giordano that age should not be criterion for the allocation of life enhancing treatments [17], this does not resolve the issue. We still need to determine how to allocate resources between these two where we cannot do both, and because the latter disproportionately affects older people this should be done in a way that does not discriminate unfairly against them. One option here, that is in line with Harris' own account, is that life prolonging treatments should always have priority over life enhancing treatments (with the exception of treatments for conditions that would otherwise be completely debilitating).[15] In this context, however, this can lead to very counter intuitive results in practice. It would require that we not provide any life enhancing treatments for older people until after we had made sure that all life prolonging treatments that might be needed are available to those who need them – a point that might not in practice be reached (particularly in poorer

countries). Whilst Harris also argues that more resources should be allocated to healthcare, and this might seem to provide a way to respond to this point, his argument for increased spending is based on the priority he gives to protecting against threats to life and liberty [15,16] and as such would not extend to cover cases where resources may be needed to enhance quality of life but life is not itself under threat.

The problem with such an approach is that it puts all the weight on prolonging life, and none at all on the quality of life. Effectively such an approach treats quality of life as unimportant, at least compared to length of life, when it comes to resource allocation decisions. If we only consider life prolonging treatment then this may not appear to be too much of a problem – it allows Harris to argue (as he does in the case of QALYs) that approaches that would give those whose quality of life is poor lower priority when it comes to life prolonging treatments fail to show everyone equal respect.[9,15,16] But when we turn our attention to the different ways in which health can be affected by ageing such an approach looks problematic. It threatens to leave older people to struggle on with increasing health problems, problems that could be alleviated should we choose to do so, because those problems are not themselves life threatening.

Furthermore, people, including older people, are in their own lives willing to take risks with their future lives in order to do the things that are important to them and enhance the quality of their lives.[18,19] Both quality and quantity of life matter to us throughout our lives. A system that prioritises life prolonging treatment in the way just described fails to capture what is important in the lives

of the population. This is not an abstract theoretical point as at least to some extent current health care systems prioritise in this way – that is, they focus their resources on acute care and curing those things that can be cured.[1,20,21] But as Atul Gawande puts it, “our most cruel failure in how we treat the sick and aged is the failure to recognize that they have priorities beyond merely being safe and living longer”. [22] A system that prioritises living longer above everything else will not reflect what is important to the lives of those the system is there to help.

If we want a system that combines consideration of both life-enhancing and life-prolonging considerations, there are two options that have been widely discussed in medical ethics. The first adopts a cost- effectiveness approach that incorporates a measure of both the impact of a treatment on the length of life and its impact on the quality of that life. The most widely discussed option of this type is the quality adjusted life year (QALY).[23] There are however some practical problems in utilizing QALYs in this context. First, the effect of a particular intervention, as already noted, is dependent in part on factors other than the intervention itself – including the social context.[1] As the World Health Organization point out the environment can be a stronger influence on functioning than the underlying physiological changes because “it determines whether at any given level of intrinsic capacity we can ultimately do the things that are important to us.”[24] If that context is one in which older people are viewed as a problem, or as inevitably in decline and unable to do things, medical interventions may not be able to produce as beneficial an effect as they otherwise would. That is, in an ageist society interventions to improve the quality of life of older people by mitigating the impact of physical changes may

have compromised effectiveness. However, it would be morally problematic to conclude on that basis that they are not cost effective because the cost of the intervention does not produce as many additional quality adjusted life years as interventions aimed at other sections of the population. To do so would be to hit older people with a double blow – treatments that might improve their condition are not cost effective because they are already living in an unsupportive or discriminatory environment. Second, it is not unusual for older people to have more than one health problem and the solutions to those problems may be multifactorial.[25] Because of this working out the improvement in quality of life for any one intervention can be difficult – a problem that can be exacerbated when some interventions (for example, those that involve people providing care) can be a response to more than one problem. Third, if medical assistance is not provided this does not mean that the older person does not need help – those things that treatment would have enabled her to do may no longer be things that she can do, but these may still be things that have to be done (for example, washing herself, or buying food). Someone has to provide this assistance. That help may not be provided by the healthcare system but it will impact on the question of how much of an improvement in quality of life a medical intervention provides. This effectively can push support out of the healthcare system and onto families and friends. In turn, this raises significant issues about the extent to which it is appropriate to rely on such a system, particularly given its disproportionate effect on women (who fill most of the caring roles). Giving wider social changes this may not be either fair or sustainable.[1] A focus just on the effects of a particular intervention can miss all these wider social questions, and can operate on the assumption that they will continue as before. But that

does not necessarily help to ensure that justice is provided for older people in the provision of healthcare resources.

An alternative to QALYs is to adopt a whole life course approach along the lines argued for by Norman Daniels.[10,11,12] Daniels argues that age is different from other features such as ethnic group or sex because most of us (if we are fortunate) will pass through different ages – those who are now old were young once, and many of those young now will become old. As such, decisions about spending on health care at different stages of life can be thought of, not in terms of which person will get the treatment or intervention, but in terms of what would be available to each person at different stages of his or her life. Because we are prone to view things from the stage of life we are currently at, Daniels adopts a position that requires that we make a decision independent of that knowledge. In doing so he asks us to consider (in a context in which choices have to be made because not all health care that is needed or wanted can in fact be provided) what we would use our resources to insure against, and how that insurance cover would be linked to the different parts of our lives. Whilst in earlier work this approach was used to argue in favour of prioritizing life prolonging treatments for the young over the old – on the basis that a prudent and rational person would put more into ensuring they live to be old than that they continue to live once they are already old – Daniels more recently has argued that this will only be the case in unusual circumstances.[12]

In utilizing such an approach to address the problems we are concerned with in this paper it will be useful to start with a criticism of systems, like QALYs, that

value both quality and quantity of life. That we do not always prioritise living longer over everything else in our own lives does not mean, as Harris argues in his criticism of QALYs, that we will necessarily agree to a system that denies us life prolonging treatment to improve someone else's quality of life (even where we would make that trade off in our own life).[9] But this need not be surprising – I will prefer the option that benefits me, or those close to me, where I have a choice simply because this matters more to me. An approach like that of Norman Daniels' outlined above is designed to avoid this personal bias. When we think about what we would insure against in a situation where we cannot insure against everything (and do not know what ill health we will experience) it is unlikely that we would choose to ensure that we would have access to life prolonging treatment whenever it is needed and only after that has been done buy insurance that provides cover for chronic conditions or treatments that will mitigate (and help compensate for loss of functioning caused by) things like diabetes, osteoporosis, worn out joints, and loss of hearing or vision. Instead we would try to ensure that there will be support for us if we develop these kinds of condition.[12] If that is what we would each choose then none of us has reasonable grounds to complain if the allocation of healthcare resources reflects this – and note that this applies even if the resulting allocation means that life prolonging treatment is not available when we need it (we were willing to take the chance that it was not available in order to ensure other things were).

If this is right then what are the implications for questions of justice when it comes to an ageing population? There are two that are important in the context of this paper. First, as a population ages the proportion of its healthcare

resources that go to treatments that enhance the lives of older people should rise faster than the rate of increase of the proportion of older people in the population. If very few people live beyond 65 then the chances of any one of us needing treatment for things like osteoporosis or dementia are low (the chances of us developing these conditions goes up with age and goes up at an increasing rate once we pass 65). Given the low likelihood of needing such treatment it may be rational not to put many resources into ensuring treatment is available should we develop these conditions. Other things that pose more of a risk to our health, including things that pose a risk to our living into old age, may reasonably have higher priority. It may be reasonable to prioritise life prolonging treatments that will help ensure we live into old age, rather than treatments that would enhance the quality of our lives should we develop particular chronic conditions in old age. But as life expectancy goes up things change. As the chance that a person will live beyond 65 increases the chance of them developing the kinds of condition that are the focus of this paper also increases. Furthermore it does so in a way that should make a difference in how we allocate health care resources.

If the chances of developing a chronic illness were the same whatever our age then as we live longer the chances of developing it at some point in our lifetime go up (there is a chance that we develop the condition in any one year and so the chances that we develop it in the course of a lifetime goes up the longer we live). If this was the case for all conditions then living longer need not alter the relative distribution of resources between conditions – they all equally become more likely over the course of our lifetime. But this is not the case as we have seen with all conditions. For those conditions that are our focus here the chances of

developing them as we live longer goes up not only in absolute terms but also relative to other types of condition. Given this shift a rational and prudent person would change their priorities when thinking about what to insure against. They would give higher priority than before to providing resources to help with the conditions that are more likely to occur in old age. What this means is that as the population ages resources for providing support for the chronic and potentially limiting conditions that are more common among those who are older should take up a larger proportion of those available. What would have been fair and appropriate when life expectancy was lower will no longer be so. Making such shifts in practice runs into institutional inertia and so can be difficult. But a failure to do so leads to a mismatch between the services provided and what justice requires. Those who lose out in this mismatch are those who are older – they are the ones who are treated unfairly by a failure to change. We might argue that in this way a failure to change results in a system that does not provide equal consideration to those who are older adults. It is worth noting in this context that the World Health Organization have reported that around the world “there is low priority within health policy to the challenge of the demographic transition” of ageing populations.[26] On the account developed here justice requires that this change.

Second, what fairness requires when it comes to the allocation of healthcare resources – in particular what it requires when it comes to the balance to be struck between life prolonging and life enhancing treatments – cannot be determined by focusing purely on the ways different treatments affect patients’ health. As we have just seen life expectancy affects how this balance should be

made. Furthermore, as described earlier, features of the wider social environment are also relevant. For this reason assessments of what fairness requires when it comes to resource allocation need to be rooted in details of the population that is served by the healthcare system. In turn this means that what will count as a fair distribution of healthcare resources will vary depending on the context. A way of splitting resources between life prolonging and life enhancing treatments may be fair when it comes to a particular population, but this does not mean that it would be fair for a different population or even for that same population at a later time.

This consequence of taking into account the ways people age places significant limits on what can be said in abstract terms about what a fair healthcare resource allocation system would look like. Adopting Daniels' prudential lifespan approach does, however, give some guidance about how to go about making an assessment of whether a particular allocation would be fair in any given context. As has already been pointed out this approach requires that decision makers consider what rational and informed individuals would use the limited resources available to insure against, and how that insurance cover would be linked to the different parts of their lives. However, as Daniels has himself argued, there may well be reasonable disagreement among such decision makers, all of whom are well informed, about where to draw the line between different types of treatment, and more broadly between provision of treatment that is life prolonging and that which is life enhancing.[12] As a result, what is needed when making decisions about the distribution of healthcare resources within a healthcare system that serves a particular population is both a means to bring

together these different perspectives and a fair procedure for resolving the resulting disagreements. Arguing for, and defending, any such procedures would take us beyond the aims of (and space available in) this paper. My aim has not been to argue that a particular way of distributing resources is fair or unfair. It has instead been to argue that certain types of information – about patterns of ageing, about average life expectancy, about the ways in which the chances of developing certain conditions changes with age – are relevant when it comes to assessing the fairness of resource allocation arrangements, and that these types of information have not been given adequate weight in accounts of the connections between age and resource allocation in healthcare.

The relevance of age in some contexts

As we have already seen an anti-ageist argument in debates about resource allocation takes it that age should not be a criterion when determining what treatments to give (at least in the case of life prolonging treatments). To use age in this way would, it is argued, fail to show equal consideration and respect for people who are older – that is it would violate what Harris calls the ‘age indifference principle’.[16,17] In this section I want to argue that whatever its merits when it comes to life prolonging treatments (something I will not address here), when it comes to preventative measures this approach is flawed. That is, I will argue that (at least in some cases) allocating interventions using age as a criterion is both wholly consistent with showing equal consideration to older people, and morally required.

In order to develop this argument it will be useful to start with an example. In the UK those over 65 are routinely offered vaccinations against influenza, something that is not offered to adults under 65 unless they fall into one of several fairly narrowly defined 'high risk' categories.[27] Similarly, in the UK the National Institute for Health and Care Excellence guidelines on falls require doctors to ask patients over 65 about falls in the past year, but they are not required to do this for younger patients (with the exception of patients over 55 who fulfill other set criteria).[28] A potential problem for these kinds of age based policies is that whilst risk (or increased risk) is associated with age, it is not the case that merely being older means that as an individual one has a higher risk of serious harm than all those one is older than. That is, the policies offer steps to prevent serious harm due to infection or falls to some individuals whilst denying it to others, even where at the individual level the latter may be as likely to experience those harms as the former.

We might conclude from this that age should not be a factor in determining which interventions to provide – the interventions should be available to all, to none, or only to those who are in fact at higher risk. The problem with this response, however, is that each of these options faces significant challenges. Offering influenza vaccine to all adults, for example, would considerably increase the cost of the vaccination program in a way that does not produce anything like comparable increases in benefit. This may in turn lead to a judgment that vaccination is not cost effective when compared to other kinds of preventative medicine that could be introduced, and thus to this not being a viable option. Not offering the vaccine to anyone however would be to leave a large group, older

adults, at risk of serious harm – harm that could have been prevented. This would be the case because they, as a group, are more likely to experience this harm than those who are younger than them. Because the risk is not consistent across the life course, but increases with age, they will lose out. This does not appear to be consistent with fair treatment of older people.

It might be thought that this can be avoided by only giving the vaccination to those who are in fact at higher risk – this will include some but not all older people. However, this response assumes that we can draw a line to distinguish what characterizes those at increased risk in a way that is independent of age. This may not in practice be possible when drawing up policy – or at least may not be possible without spending more than the costs of offering the intervention to all above a certain age. The patterns of ageing that can lead to increased risk are of many different types, and it is not clear that there is a way of characterizing them that picks up all those at increased risk of serious harm. That is, there is not necessarily a way of picking out all and only those at increased risk. In that case any policy will draw the line between those who are included and those who are excluded from provision of some intervention in a way that either excludes some at higher risk, or includes some at lower risk. The question is really about how we should go about doing this.

A way to address this problem is, as above, to make use of Daniels' prudential lifespan approach.[10,11,12] The advantage of this approach for our purposes here is that it asks us to consider the ways in which we would want resources to be available across our own lives and excludes knowledge of our own health

status. In that context it would appear reasonable to choose to have protection and preventative measures available when the risks are high. If we were to use our resources to provide vaccination against influenza to all adults we will be using resources in a way that provides little expected benefit. In contrast, given the increased risks when older and the knowledge that we are likely to live to those older ages, ensuring that the vaccine is available then would provide greater potential benefits. There may be reasonable differences about what exactly we would agree to in determining what preventative measures would be available at what points in our life (this will in part depend on what else we need to take account of). But for our purposes here we can put this to one side. The point I want to draw out is that using this approach highlights the relevance for healthcare allocation decisions of the ways in which risk varies across the life course. Because the risks are higher when older this means that we should prioritise protection, and preventative measures, for those who are older (along with other high risk groups). In the case of influenza vaccination this would mean we should prioritise vaccinations for those who are older over those who are younger. This does not stem from giving the lives of younger adults lower priority. Instead it stems from the fact that age is associated with increased risk of serious harm.

Concluding remarks

When it comes to resource allocation decisions I have argued that the increasing chances of becoming ill or losing function as we age matter. The account given may be challenged in its details. But my aim has not been simply to argue for that account, it has been to argue that the focus on age in resource allocation

decisions has shone a bright light on some areas, but left others (which are also important) in the dark. The arguments above aim to throw some light on them and are in part a plea for more work in this area. However, before finishing it is important to point out that when we shift from questions about resource allocation to consider interventions with particular patients the focus on a process of decline as one of the patterns of ageing brings with it risks and challenges of its own. This is because when we focus at the group level we are concerned with probabilities, but as highlighted at the start of this paper these group characteristics cover a wide range of different patterns of ageing.

A failure to remember that different people age in different ways, and that there are many trajectories that a person can traverse as they age, can at the individual level lead to problematic outcomes (particularly in a culture that is steeped in narratives of ageing as decline). One potential danger here is that healthcare professionals may jump too quickly when an older patient shows signs of confusion (or simply comes to what looks to be a poor decision) to an assessment that he or she lacks capacity.[29] Having said this, the right response to this possibility is not to ignore the increased risks that come with growing older. To do that is to risk failing to provide appropriate care and support where it is in fact needed. We do not, or should not, want doctors and other healthcare professionals to ignore indications of underlying health problems (either physical or psychological). However, it is important that they bear in mind that these are only indicators that something may be wrong, not that something is wrong. This is a potentially tricky balancing act to get right, particularly in a culture in which stereotypes of older people are prevalent. It requires judgment

and skill on behalf of the attending healthcare professional because there are two ways in which a healthcare professional can go wrong in this context – failing to recognize and respect the older patient’s autonomy because too much was read into features their behavior or choices, or failing to recognize underlying health problems and hence failing to address them. Either way risks acting in a way that is inconsistent with principles of medical ethics.

References

- 1 World Health Organization. World report on ageing and health. 2015.
http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1 (accessed December 2015)
- 2 Lunney J.R., Lynn J., Foley D.J. et al. Patterns of functional decline at the end of life. *The Journal of the American Medical Association* 2003;289(18):2387-2392
- 3 Gawande A. Being Mortal: Illness, Medicine and What Matters in the End. London: Profile Books Ltd 2014: 28
- 4 World Health Organization. World report on ageing and health. 2015.
http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1 (accessed December 2015) at p.29
- 5 Silvers A. Judgment and justice: Evaluating health care for chronically ill and disabled patients. In Rhodes R, Francis LP, Silvers A, eds. *The Blackwell Guide to Medical Ethics*. Oxford: Blackwell Publishing Ltd 2007:354-372

- 6 Wanless D. Securing Good Care for Older People: Taking a Long-Term View. London: King's Fund 2006
- 7 Casey B, Oxley H, Whitehouse E, et al. Policies for an Ageing Society: Recent Measures and Areas for Further Reform. Paris: OECD 2003
- 8 Williams A. Intergenerational equity: An exploration of the 'fair-innings' argument'. *Health Economics* 1997;6:117-132
- 9 Harris J. The Value of Life. Abingdon: Routledge and Kegan Paul 1985: 91-102
- 10 Daniels N. Am I My Parents' Keeper. Oxford: Oxford University Press 1988
- 11 Daniels N. Justice between generations. *Journal of Political Theory* 2008;16(4):475-494
- 12 Daniels N. Just Health: Meeting Health Needs Fairly. Cambridge: Cambridge University Press 2008: 161-190
- 13 Callahan D. Old age and new policy. *Journal of the American Medical Association* 1989;261(6):905-906
- 14 Callahan D. Setting Limits, What Kind of Life. New York: Simon and Schuster 1990

15 Harris J. QALYfying the value of life. *Journal of Medical Ethics* 1987;13:117-123

16 Harris J. The age-indifference principle and equality. *Cambridge Quarterly of Healthcare Ethics* 2005;14:93-99

17 Giordano S. Respect for equality and the treatment of the elderly: Declarations of human rights and age-based rationing. *Cambridge Quarterly of Healthcare Ethics* 2005;14:83-92

18 Bowling A, Dieppe P. What is successful ageing and who should define it? *BMJ* 2005;331(7531):1548-1551

19 Grewal I, Lewis J, Flynn T, et al. Developing attributes for a generic quality of life measure for older people: preferences and capabilities. *Social Science and Medicine* 2006;62(8):1891-1901

20 Goodwin N, Sonola L, Theil v, et al. Co-ordinated Care for People with Chronic Complex Conditions: Key Lessons and Markers for Success. London: The King's Fund 2013

21 Smith SM, Soubhi H, Fortin M, et al. Managing patients with multimorbidity: systematic review of interventions in primary care and community settings. *BMJ* 2012;345:e5205

22 Gawande A. Being Mortal: Illness, Medicine and What Matters in the End.

London: Profile Books Ltd 2014: 243

23 Williams A. The value of QALYs. *Health and Social Service Journal*

1985;94(4957suppl):3-5

24 World Health Organization. World report on ageing and health. 2015.

[http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?](http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1)

[ua=1](http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1) (accessed December 2015) at p.30

25 Marengoni A, Angleman S, Mells R, et al. Aging with multimorbidity: A

systematic review of the literature. *Ageing Research Reviews* 2011;10(4):430-

439

26 World Health Organization. World report on ageing and health. 2015.

[http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?](http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1)

[ua=1](http://apps.who.int/iris/bitstream/10665/186463/1/978924094811_eng.pdf?ua=1) (accessed December 2015) at p.4

27 National Health Service. The NHS Schedule.

[http://www.nhs.uk/conditions/vaccinations/pages/vaccination-schedule-age-](http://www.nhs.uk/conditions/vaccinations/pages/vaccination-schedule-age-checklist.aspx)

[checklist.aspx](http://www.nhs.uk/conditions/vaccinations/pages/vaccination-schedule-age-checklist.aspx) (accessed December 2015)

28 National Institute for Health and Care Excellence. Falls in older people: assessing risk and prevention. 2013. <http://www.nice.org.uk/guidance/cg161> (accessed December 2015)

29 Hughes JC. Ethical issues and health care for older people. In Ashcroft RE, Dawson A, Draper H, et al, eds. Principles of Health Care Ethics Second Edition. Chichester: John Wiley and Sons Ltd 2007: 469-474